



Faculty of **Education** The University of Hong Kong 香港大學教育學院

School-based Support Service 2020-21 Quality Education Fund Thematic Network (QTN-T) Catering for Culturally and Linguistically Diverse Learners in Primary Mathematics Classrooms

校本支援服務 2020-21 優質教育基金主題網絡計劃 照顧多元語言及文化的小學數學課堂

Territory-wide Dissemination Seminar 計劃總結分享會

Becoming More Responsive to Culturally and Linguistically Diverse Mathematics Classrooms 更有效地回應 數學課堂的文化及語言多樣性

9 July 2021 | Friday | 2:30 – 5:30pm 2021年7月9日 | 星期五 | 下午2:30 – 5:30

Programme

2:30 - 2:45 pm	Welcome and Introduction
2:45 - 3:25pm	The Applicability of Picture Books to Teach Lower Primary Mathematics 以繪本教數學:適用於我的初小課堂嗎?
	 Pat Heung Central Primary School / Islamic Primary School
	Break
3:35 - 4:15 pm	Supporting Multicultural Students to Visualise and Verbalise the Concept of Division Through Activities with Manipulatives 支援多元文化學生:眼到、耳到、口到、手到學除法
	- Kam Tin Mung Yeung Public School / CNEC Ta Tung School
	Break
4:25 - 4:50 pm	Exploring Division of Fractions with Paper Strips and Mathigon Applet in Multicultural Classrooms 在多元文化課堂中探究分數除法的好幫手:紙條和 Mathigon 小工具 - Hong Kong Taoist Association Wun Tsuen School
4:50 - 5:15 pm	Concluding Remarks
5:15 - 5:30 pm	Q&A



School-based Support Service 2020-21 Quality Education Fund Thematic Network (QTN-T)





Catering for Culturally and Linguistically Diverse Learners in Primary Mathematics Classrooms

校本支援服務 2020-21 優質教育基金主題網絡計劃 **照顧多元語言及文化的小學數學課堂**

Coordinated by Faculty of Education, The University of Hong Kong 香港大學教育學院 籌辦

Background of the Project

2015-2017 Supporting the Learning and Teaching of Mathematics for **NCS Students** in Secondary Schools

2017-2019 Supporting the Learning and Teaching of Mathematics for *NCS Students* in Primary Schools

2019-2020 Supporting the Learning and Teaching of Mathematics for *NCS Students* in Primary Schools

²⁰²⁰⁻²⁰²¹ Catering for *Culturally and Linguistically Diverse Learners* in Primary Mathematics Classrooms

2021-2022 Catering for *Culturally and Linguistically Diverse learners* in Primary Mathematics Classrooms – *Developing a Professional Network*



先在劉格畫出5等份

並在外艇填上租線條 ·

著色部分佔整體的考。

並在分輕現上相關於 肥其中3等份與上顏色; 組織外輕是1、代表物件的整體。_____

Figure 3

Number Line

18

-

5=6+6-18 2×6-18

3×10-0×0+0×0

140

Papare 4

5+(2+7) or (5+2)+7

91 92 93 94 95 96 97 98 99 100



Catering for Culturally and Linguistically Diverse Learners in Primary Mathematics

照顧多元語言及文化的小學數學課堂

About Us

CULTURAL AND LINGUISTIC DIVERSITY

Catering for Culturally and Linguistically Diverse Learners in Primary Mathematics Classrooms

– Developing a Professional Network

照顧多元語言及文化的小學數學課堂 - *專業網絡發展*

學校除按需要申請兩項支援服務外,還可額外申請
 「照顧多元語言及文化的小學數學課堂 - 專業網絡發展」
 詳情請參閱教育局通函第18/2021號

• 有興趣的學校可於2021年3月24日至4月30日,透過教育局 網頁申請(網上申請表編號:C2)

cldmaths.edu.hku.hk

CURRICULUM

PEDAGOGY

Launched in November 2020



MENU =



15 schools with various proportion of EM students, ranging from 14% to 92%



39 EMI classes 23 CMI classes





Culturally and Linguistically diverse student: <u>an individual</u> who comes from a home environment where <u>a language</u> <u>other than Chinese</u> (Cantonese) <u>or</u> <u>English is spoken, and</u> whose <u>cultural values and</u> <u>background may differ from the</u> <u>mainstream culture</u> Students with DIVERSE needs

Ethnic Minority (EM) students

Non-Chinese Speaking (NCS) students Lowly motivated !??

Weak in Chinese and English !??





0.

"Diversity is not something to be tackled but rather something to be celebrated. ...

Students with DIVERSE needs

"... By embracing diversity among students, teachers would value diversity as an asset, making it <u>an opportunity for</u> <u>enhancing their repertoire of teaching skills</u> as well as <u>professional capacity and development</u>." (CDC, 2017, p. 4)







Activity first

- Beyond algorithm
- Culture matters
- Depth with fluency
- Exercise counts







Fraction Bars P5 Division of Fractions



20

CE

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Using Magnetic Plates to explore different Nets of a Cube

0.4

Activity first





What is this? How many in one plate?









Culture matters

Figure cards to facilitate teacher-student communication and support concept-building

Use visual models to enhance skill building and allow students to discover patterns

Visual models to encourage more work on misconceptions

Depth with fluency

Concept building with manipulation

1. 試畫圖或用文字說出一個用數式9-3去計算的故事。

Student A's writing:

我内有情景哉,後來影

Student B's drawing:

Ask students to think of an everyday situation that may lead to a mathematical expression

Exercise counts

Ask students to show their understanding of a word problem.

1. 思思寫了8個詞語後,再寫多4個,她共寫了詞語多少個?

Student D's drawing:

Student E's drawing:

Take a look at these <u>Cupcokes</u>. I cooked for my friends. How would I describe this array? That's right, <u>three rows of six</u>! Now we could say 3+3+3+3+3+3. But we can save ourselves some time. Looking at this array let's say <u>Three times six is eighteen</u> The multiplication equation is: $3 \times 6 = 18$

General modes of support to the project schools (1)

On-site Support Service to each of the 15 Project Schools

- Collaborative Lesson Planning (CLP)
- Lesson Observation (LO) with Post-lesson evaluation
- Consultation
- Mid-year & year-end review meetings
- Other professional development activities

General modes of support to the project schools (2)

Major network activities across 15 Project Schools

- Joint-School Sharing Sessions
- Thematic Workshops
- Territory-wide Dissemination

CONTENT:

USING SCENARIOS WITH REAL EXAMPLES TO BUILD THE CONCEPT OF DIVISION OF FRACTIONS (Delia (Man Kiu) English Primary School)

小二除法教學中的語言支援 (Kam Tin Mung Yueng Public School)

螞蟻兵團覓食記之因數及倍數

(PLK Gold & Silver Exchange Society Pershing Tsang School)

USING A MANIPULATIVE ACTIVITY TO EXPLORE THE NETS OF A CUBE (Sir Ellis Kadoorie (S) Primary School)

🔬 優 弱 数 前 基 金 Faculty of Education Tarthenity of Hong K 目港大學教育學 **QTN-T** Project and Linguistically Diverse **Becoming More Responsive to Culturally and Linguistically Diverse Mathematics** Classrooms 9 July 2021 | Friday | 2:30 - 5:30pm Is limited to Contents The applicability of picture books to teach lower primary mathematics Supporting multicultural students to visualise and verbalise the concept of division through activities with manipulatives Exploring division of fractions with paper strips and Mathigon applet in multicultural classrooms To register, please visit https://qrgo.page.link/D5igD or scan the QR code. Primary and junior secondary school teachers are welcomed!

15 Project Schools

按英文字母次序 (in alphabetical order):

Bui O Public School 杯澳公立學校 Catholic Mission School 天主教總堂會學校

Chan's Creative School (Hong Kong Island) 啓基學校(港島)

CNEC Ta Tung School 中華傳道會許大同學校

Delia (Man Kiu) English Primary School 地利亞(閩僑)英文小學

Hong Kong Christian Service Pui Oi School 香港基督教服務處培愛學校

Hong Kong Taoist Association Wun Tsuen School 香港道教聯合會雲泉學校

Islamic Primary School 伊斯蘭學校

Kam Tin Mung Yeung Public School 錦田蒙養公立學校

Northern Lamma School 南丫北段公立小學

Pat Heung Central Primary School 八鄉中心小學

Po Leung Kuk Gold & Silver Exchange Society Pershing Tsang School 保良局金銀業貿易場張凝文學校 Sir Ellis Kadoorie Primary School 官立嘉道理爵士小學

St. Margaret's Co-educational English Secondary and Primary School 聖瑪加利男女英文中小學 Tsuen Wan Trade Association Primary School 荃灣商會學校

Acknowledgement

More than 600 EM students and about 500 Chinese students in 15 project schools

> 39 EMI classes 23 CMI classes

15 schools with various proportion of EM students, ranging from 14% to 92%

P1	P2	Р3	P4	Р5	P6
 Addition Coins Measurement Place Value Word Problem 	 Division Money Multiplication Time 	 Fractions Multiplication Parallel Lines & Perpendicular Lines Word Problems 	 Factors and multiples Quadrilaterals Multiplication Fraction 	 Area Area of Polygons Division of Fractions Net Volume 	MoneyPercentageSpeed

Topics discussed with Project Schools

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MENU =

05 Nov 2020

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FACILITATING STUDENTS

05 Nov 2020

Different Represent...

27 Oct 2020

Pedagogy

Activities First

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Chinese

Key Stage

C KS1 (P1-P3) KS2 (P4-P6)

KS3 (S1-S3)

- Beyond Algorithm
- Culture and Language
- Depth with Fluency

Curriculum

- Number Strand
- Measures Strand
- Data Handling Strand
- Algebra Strand

Numbers

Fractions in Date

30 Oct 2020

21 Dec 2020

□ Shape and Space Strand

Learning Unit

Arithmetic operations

A Remainder of One 05 Nov 2020

Emily Sum & Antonia Yip

Fractions in Disguise

30 Oct 2020

Developing Concep...

Multiplication

18 Nov 2020

Simple but deep int... 02 Nov 2020

Bean Thirteen

30 Oct 2020

09 Nov 2020

Entity Sum & Antonia Yi

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Team Members

Project Leader

• Mr WONG Ka Lok

Organisation-in-charge

- Prof LEUNG K S Frederick
- Dr MOK Ah Chee Ida
- Dr KI Wing Wah
- Dr LEE Man Sang Arthur

Curriculum Development Officers

- Dr CHENG Wing Kin
- Dr SUM Sze Wan Emily
- Mr TAM Chi Leung Samuel
- Ms WANG Dichen Daisy

Senior Research Assistant

• Ms YIP Yu Ting Antonia

Project Manager

- Ms LO Siu Yu Agnes
- Ms CHOW Wing Sze Samantha